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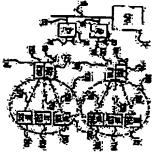
**3EACH ROBERT** 

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(64) COEXISTENCE TECHNIQUE IN WIRELESS NETWORK

between two different network protocols, such as the PROBLEM TO BE SOLVED: To provide a cooxistance technique which is used for frequency coordination

radio transceiver, deactivating the first radio transceiver using the frequency band, and a coordinator associated protocol (which may be the Bluetooth protocol) and operating in accordance with a second communication communication protocol, a second radio transceiver network and operating in accordance with the first 2.4 GHz band), a base station connected to a wired protocol) and using a frequency band (which may be the s first radio transceiver operating in accordance with a SOLUTION: Coordination is accomplished by the use of with the beso station for, in turn, activating the first IEEE 80211 and Blustooth protocols, operating in nctiveling the second radio transcriver, and descriveting irst communication protocol (which may be the 802.11 productly with one enother.



Date of extinction of right] decision of rejection) Date of requesting appeal against examiner's of rejection] [Patent number] the examiner's decision of rejection or Number of appeal against examiner's decision [Date of registration] Data of final disposal for application) application converted registration) )Vind of final disposal of application other than

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**EGAL STATUS** 

the second radio transceiver.

[Date of request for examination]

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### CLAIMS

transmitting adjustment characterized by having the regulator for making said 1st wireless wireless transceivor de-energize. transcriver do-energize, moting said 2nd wireless transcriver energize and making said 2nd station and said 1st wireless transactives is made to energice in order. Equipment for the 2nd communications protocol and uses said frequency band, it is combined with said base protocol and uses a certain frequency band. The base station which operates according to said [Claim 1] The 1st wireless transceiver which operates according to the 1st communications let communications protocol, and the 2nd windoss transceiver which operates according to the

[Claim 8] Equipment according to claim 2 characterized by said 1st communications protocol being an IEEE802.11 protocol. [Claim 2] Equipment according to claim 1 characterized by said frequency band being 2.4GHz.

being the Bluetooth protocol [Claim 4] Equipment according to claim 3 characterized by said 2nd communications protocol

[Claim 8] Equipment according to claim 5 characterized by said housing being suitable for and said 2nd wireless transcaiver in [ both ] housing (Chim 5) Equipment according to obim 4 characterized by carrying said 1st windess transceives

beyond it which is combined with said 2nd transcaiver and operates according to said 2nd meering to a best. [Claim 7] Equipment according to claim 5 characterized by having further 1 or the slave unit

finger can be equipped with at least one of said steve units beyond 1 or it. [Olsim 8] Equipment eccording to claim 7 characterized by being the scanner by which a user's communications protocal

ber code information to said 2nd transcoiver. [Claim 9] Equipment according to claim 8 characterized by the shifty of said according to transmit

beyond I or it being a printer. [Chaim 10] Equipment eccording to claim 7 characterized by at least one of said slave units

beyond 1 or it being personal-data management equipment. [Chim 11] Equipment according to claim 7 characterized by at least one of said clave units

wireless transceiver do energize turning into the 2rd hour. 1st hour, making said 2nd wireless transcolver energics, and a period while making said 2nd energiza, and a period's while melting sold let wireless transceived's de-energize turning into the predetermined specing of immediazation the 2nd bour by making said list wireless transceiver (Chaim 12) Equipment according to claim 5 characterized by being said 1st hour and said

and said equal spacing (Claim 15) Equipment according to claim 12 characterized by the 2nd hour being said 1st hour

2nd communications protocol and uses said frequency band. Both the preparation, said 1st protocol and uses a certain frequency band. The base station which operates according to said wireless transceiver, and said 2nd wireless transceiver are carried in housing. Nate said 1st let communications protocol, and the 2nd wireless transceiver which operates according to the [Chaim 14] The 1st wireless transcriver which operates eccording to the 1st communications

> seld housing for making said 2nd wireless transceiver energize and making said 2nd wineless Equipment for the transmitting adjustment characterized by having the regulator combined with transcaiver de-energize. mindess transceiver energize and said 1st winaless transceiver is made to de-energize in order

[Cleim 15] Equipment according to claim 14 characterized by said frequency band being about

being an IEEE802.11 protocol [Claim 16] Equipment according to claim 15 characterized by said 1st communications protocol

being the Bluetooth protocol Oben 17] Equipment according to claim 16 characterized by said 2nd communications protocol

energiza, and a period's while making cald list wireless transceiver's de-energize turning into the predeterminad spacing of immobilization the 2nd hour by making said 1st wireless transceiver wireless transceiver de energize turning into the 2nd hour. ist hour, making said 2nd wireless transcaker energize, and a period while meking said 2nd (Claim 18) Equipment according to claim 14 characterized by being said 1st hour and said

and said equal spacing. [Claim 19] Equipment according to claim 18 characterized by the 2nd hour being said 1st hour

protocol and uses said about 2.40Hz frequency band, it is equipment for the transmitting one of the sub-bands beyond 2 or it, and said Bluetooth protocol transcaiver using one more of adjustment characterized by for a properation and said EEE802.11 protocol transceiver using ICEE802.11 protocol. The 2nd wireless transcaiver which operates according to the Bluetooth and has 2 or a sub-band beyond it. The base station which operates according to said which uses about 2.401tr frequency band which operates according to an IEEE802.11 protocol transmission with the power level of about Ordin. (BR) [Claim 22] The 1st wireless transceive according to said IEEE802.11 protocol, is equipped with the 2nd wireless transceiver which uses said about 2.4GHz frequency band, and is characterized by transariting said Blustooth protocol transcriver which uses about 240ths frequency band, and the base station which operates said sub-bands beyond 2 or it. IEEESUZ.11 protocol, operates according to the Bluetooth protocol with the 1st wireless for said 1st antenna system and said 2nd antenna system to be rectangular polarization. equipped with the 2nd wireless transcoiver with the 2nd antenna system, and is characterized by which operates according to said ICEE302.11 protocol, uses about 2.40Hz frequency band, is protocol with the 1st wireless transceiver with the 1st antenna system, and the base station (Claim 21) it is equipment for the transmitting adjustment which operates according to an IEEE802,11 protocol, uses about 2.40Hz frequency band, operates according to the Bluetoot) (Claim 20) it is equipment for the transmitting adjustment which operates according to an

shead function for judging whether it is 44 which 2 or the sub-band beyond it is used by the 1st wireless transceiver Equipment for the transmitting adjustment characterized by having the book and has the 2nd wireless transceiver which uses said about 2.4GHz frequency band. Said 2nd operates according to said IEEE302.11 protocol, it operates according to the Skuetooth protocol eccording to an IEEE802.11 protocol and has 2 or a sub-band beyond it. The base station which wireless transceiver, and is used also by said 2nd wireless transceiver. [Claim 23] The 1st wireless transceiver which uses about 2.4GHz frequency band which operates

order to make said 2nd wireless transcoiver de-energize, while said 1st wireless transceiver is 2nd communications protocol and uses said frequency band, Equipment for the transmitting adjustment characterized by having the regulator combined with said 1st wireless transceiver in protocol and uses a certain frequency band. The base station which operates according to said let communications protocol, and the 2nd windless transceiver which operates according to the [Claim 24] The 1st whelesa transcriver which operates according to the 1st communications

communications protocol uses said 1st communications protocol, and transmits and receives a unit using the list wireless data communications protocol and the 2nd wireless data data communication signal. The quiescent time which carries out neither transmission of the [Claim 25] The action time which is the approach of operating a portable data coursurication

JP.2002-18547E.A [CLAIKS]

data communication signal with which said equipment uses said let protocol, nor reception, Said data communication unit is operated in the power reduction mode of the let communications protocol which the aforementioned equipment has. Said data communication unit is operated as master equipment by said 2nd communications protocol. The approach characterized by controlling actuation of the slave unit which is communicating with this data communication unit by said data communication unit, and controlling to operate said actuation only between said quiescent times with said 2nd data communication protocol.

(Claim 26) The approach according to claim 25 said control includes giving the signal with which said action time shows that it starts following a predetermined time interval and actuation is crided with said 2nd data communication protocol between said time intervals.

[Claim 27] The approach eccording to chilm 25 characterized by said 1st wireless data communications protocol being said IEEE802.11 protocol.

[Chim 28] The approach according to claim 27 characterized by said 2nd radio protocol being Bluetooth.

[Claim 29] An access point and at least one portable type unit arranged so that it say be combined with said access point using the 1st wireless protocol and other units and wireless data transmission may be performed using the 2nd wireless protocol. Are the approach of operating a properation services data telecommunication system, and a periodic beacon signal is transmitted from said access point with said 1st wireless protocol. The comprehensive readyfor—sanding ability signal for preventing a pertable type unit transmitting a signal using said 1st data communication protocol between the time intervels to which it was distributed within said beacon signal period it transmits from said access point with said 1st wireless protocol. Between said allocation time intervals, it controls so that said access point avoids transmission. The approach characterized by operating said portable type unit so that it may function as master equipment which answers said electation time intervals and radio may be performed. [Claim 30] The approach according to claim 39 characterized by said 1st wireless data communications protocol being said IEEE802.11 protocol.

(Chim 31) The approach according to claim 30 characterized by said 2nd radio protocol being Shectooth.

(Claim 32) It is the approach according to claim 29 characterized by dividing said beacon signal period into three time intervals, for said access point performing data communication in power reduction mode between the 1st time interval, for said allocation time interval being the 2nd time interval, and said access point performing data communication between the 3rd time interval using said 1st wireless protocol.

(Claim 31) The approach according to claim 32 that said 1st time interval is characterized by continuing immediately at said beacon signal.

[Chim 34] The approach ecoording to claim 32 characterized by said 1st mircless data communications protocol being said IEEE802.11,

[Claim 35] The approach seconding to claim 34 characterized by said 2nd radio protocol being Bhetooth

[Claim 38] A master transceiver transmits to a slave unit between the 1st even number time slots. A slave unit transmits to said master equipment between odd number time slots. Said transminston came to be performed following the frequency hap pattern predetermined at the hop rate according to said time slot. It is the approach of operating a data telecommunication system using a master-slave protocol. Said master equipment is operated so that an interference signal may be detected on the frequency corresponding to the following time.

interference signal may be detected on the frequency corresponding to the following time shot in the 1st hour of each time stot. The approach characterized by inhibiting transmission by said number time shots when an interference signal is detected between either of the time slots before current or it.

[Claim 37] The approach according to claim 36 characterized by including the phase readjusted so that the signal corresponding to the frequency on which said master equipment is adjusted, said actuation phase detects the reinforcement of the received signal so that the signal corresponding to the frequency distributed to the time stot following a degree may be received.

and said master equipment is distributed to the current time slot may be transmitted and received.

[Claim 38] The approach according to claim 37 characterized by said protocol being Bluetooth. [Claim 39] It is arranged so that it may communicate with an access point using the 1st data communication protocol. It is an approach for performing voice communication in the wireless data belocommunication system equipped with the portable type unit arranged so that it may communicate with other equipments using the 2nd data communication protocol. The data communicate with other equipments using the 2nd data communication protocol. Between the time corresponding to said voice communication are communication protocol. Between the time intervals which sould interference with said communication first which uses said 1st data communication protocol. Said data corresponding to said voice communication are communicated between said portable type units and portable equipment which use said 2nd data communicated between said portable type units and portable equipment which use said 2nd data communication protocol. The approach characterized by consisting of changing a sound signal into the data corresponding to saund signal, and changing the data signal corresponding to a sound signal in and portable equipment.

[Claim 40] The approach seconding to claim 39 characterized by including the sound signed data with which said data corresponding to a sound signal were compressed.

[Claim 41] The approach seconding to a sound signal were compressed.

[Claim 41] The approach according to chaim 39 characterized by said 1st communications protocol being said IEEE802.11 protocol.

[Claim 42] The approach according to chain 41 characterized by said 2nd communications protocol being Bluetooth.

[Claim 43] The approach according to claim 42 characterized by said communication link between said portable type units and said portable equipment using the Shertooth ACL link. [Claim 44] The approach according to claim 43 characterized by said data corresponding to a sound signal containing compression sound signal data.

[Claim 45] It is arranged so that it may communicate the said of the strength of the said corresponding to a sound signal data.

[Claim 45] It is arranged so that it may communicate using the 1st and 2nd data communication protocol which operates with the sease frequency band. It is the approach of operating the portable type unit which came to receive the beacon signal which is combined with an access point and divides a time interval clearly with said 1st communications protocol from this access point. While the portable type unit combined with said secess point has inhibited the transmission which uses said 1st data communication protocol. The approach characterized by what said portable type unit is operated for as mester equipment so that the signal which specifies said a part of time interval may be received from said access point and it may communication protocol.

The approach is allowed unit in between for said specification part [ time interval / said ] using said 2nd data communication protocol. [Claim 48] The approach [ Claim 48] The approach [ Claim 48] The approach [ Claim 48] [ Claim 48] [ Claim 48]

(Claim 48) The approach according to chaim 45 characterized by said 1st protocol being said IEEE802.11 protocol.

[Claim 47] The approach according to claim 48 characterized by equipping said signal with a OTS signal

[Claim 48] The approach according to claim 47 characterized by said 2nd protocol being Bluetbook.

[Claim 48] It has at bast one access point and at least one portable type unit. It communicates with said access point which uses the 1st wireless data communications protocol in the 1st frequency bend. It is an approach for operating the wireless data network containing the portable type unit arranged so that it may communicate with other equipments which use the 2nd wireless data communications protocol is said 1st frequency band. The signal which displays the time amount which inhibits that the portable type unit combined with said access point transmits time amount which the communication protocol in order to perform the equipment and wireless data transmission which transmit from said socess point with said 1st communications protocol, and operate as a slave unit between said assignment time amount besides the above The approach characterized by what said portable type unit is operated for as master equipment.

(Chim 50) The approach according to claim 49 characterized by said 1st communications protocol being said EEEE802.11 protocol.

(Claim 51) The approach according to claim 49 characterized by equipping said signal with a CTS

and the communication link which uses said 2nd data communication protocol by said portable characterized by what said portable type unit is operated, said 2nd control signst is answered be answored and it may operate as master equipment Moreover, so that a slave unit and data in said portable type unit using said 1st data communication protocol, said 1st control signal may type unit is interrupted for. communication may be performed using said 2nd data communication protocol The approach type unit combined with the access point. So that the 1st and 2 control algoris may be received using the 1st and 2nd data communication protocol, it is an approach for operating the portable [Claim 52] Operate with the swee frequency band, and it is erranged so that it may communicate

EEE802.11 protocol. Claim 53) The approach according to claim 41 characterized by said 1st protocol being said

[Claim 54] The approach according to claim 42 characterized by equipping said signal with a CTS

[Translation done.]

JP.2002-185476,A (DETAILED DESCRIPTION)

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# DETAILED DESCRIPTION

Detailed Description of the Invention]

wireless networks which shere the same frequency band as a different actuation protocol. numbers 60/196,979 of April 13, 2000 presentation. If this invention is further specified about numbers 60/175,262 of January 10, 2000 presentation, and temporary application of the serial windess data network, it relates to the equipment for guaranteeing coexistence between the Field of the Invention] This application charges the profits of temporary application of the sorial

is transmitted in a predetermined frequency band and on which it has agreed. The equipment it is necessary to develop adjustment tochnique. wheless protocol beyond it to operate efficiently within the same frequency band to coincidence frequency band in many cases. Therefore, in order for the equipment which uses one or the which uses one ar the wireless protocol beyond it aperates by transmission in the same Description of the Prior Art) Redio equipment communicates nectually using the protocol which

protocol is using the 2.4GHzISM bend as defined as 802.11. (trademark) ceble network. Each of MU is combined with one of the AP. This communications the access point beyond it (AP). AP communicates with a computer through a direct or Ethernet portable type unit (ML) will consider data communication as a central computer through one or by citation known as spectrum (Spectrum) 24 (Inndemark). If this system is carried out, a system following the IEEE602.11 standard (802.11) communications protocol incorporated here [0003] For example, the grantee of this invention supplies the wireless data telecommunication

in a pradetermined cyclo channel, and the multiplication of the pseudo-random chipping of predetermined time amount similarly following a false random sequence, 802.11 equipments in a channel which has been set to the specific channel and which is different by the die longth sequence between transmission is carried out. direct sequence diffusion spectrum (DSSS) mechanism, according to it, soid date are transmitted designed now operate at the rate of cycle hop of 10 hop per second. Another approach is using a transmission in a 2.40th band. One approach is using a frequency-hopping diffusion spectrum work as a wireless Local Area Network, some prodetermined approaches will be used for the (PHSS) mechanism, in it, time amount transmission is carried out and data continue transmission [0004] In that by which the current design is cernied out, in order that 802.11 equipment may

coincidence, and when interference produced as a result bars oil transmission, in order that each equipment may by retransmission of message, it will wait for it the time chosen at random. This rendom, it transmits again. Therefore, two or the equipment beyond it starts transmission to predetermined time interval after waits for equipment between the time intervals chosen at from receiving side equipment. When reception admowledgement is not received, after with a not detected, equipment transmits has information and waits for the admoniedgement (ACH) transmission from another equipment, before starting its transmission. If other transmission is prevantion (OSHA/CA) protocol Under CSNA/CA he asks whether 8021.11 equipment has the these equipments is minimized by use of a subcarrier sensing multi-access / collision-(0005) Since all 902.11 equipments are using the same ISM frequency band, the interference in

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onables equipment to transmit to separate time amount

to specific time amount. Therefore, interference is minimized. and the 2nd stave unit answers only between the 4th specing by using this system, it is one equipment in specific Bluetooth "a pico network" — it becomes certain that an injury transmits only between the 2nd spacing. At the 3rd spacing, a master communicates to the 2nd slave unit the 1st specing, a mester communicates to the 1st slave unit and the 1st slave unit answers portable type unit with which the belt of the user who communicates with the confless scarner for this data transmission, a meeter and a slave communicate only in prodetermined specing. At typo unit operates as a master and a cordless ring scanner operates as a slave. In the system with which reads a ber code and a user is equipped as a ring is equipped. In this case, a portable Bitretooth uses communicative master/slave system. An example of the Blaetooth network is a Elizatooth specification is available at www.biustooth.com. Bluetooth is operating at a rate of between the equipment within the narrow limits transmitted with lower power lovel. The 1800 hop per second using a frequency-happing diffusion spectrum mechanism as designed now frequency band is Bluetooth (trudemark), and this is designed for the communication link [0008] Another example of the wireless specification which shallorly uses said 2.4GHzISM

communications protocol until now did not exist. ensure operating within the same frequency band with the minimum interference, the adjustment other Bluetooth like a printer or a head set again. Although a communications protocol like protocol and which communicates with the same belt wearing terminal. For example, once a user (0008) The need of adjusting transmission of the equipment which operates under a different protocol which uses the same frequency band with the need of approaching and operating many approach of use of such radio equipment in the same frequency which operates under a different 802.11 or Bluetooth was designed so that the equipment which uses the same protocol night terminal needs to communicate with the peripheral device which becames possible according to and probably a message needs to be transmitted to a belt wearing terminal from AP. This wearing terminal. And her code information is transmitted to 802.11AP, and advocatedgement scans a bar codo using a cordissa ring searner, bar codo information will be transmitted to a belt protocols, it may be desirable to use the cordess ring scanner which is using the Bluetooth which the best was equipped is communicating with the access point which uses 802.11 networks of the same protocol is recognized in the industry. For example, while the terminal with separate Bluetooth pice network is enhinized. Many individuals who approach mutually and are working by this, for example can own each portable type unit with a cordinar ring scanner. come to operate on the same frequency as coincidence. Therefore, the interference during the channel from which 79 used by Eluctaoth differed, so a different Bluebooth network is hard to pice network which enother object separated, and to operate. It is because there is a cycle (0007) in addition, as for one Blustooth pico petwork, it is desirable to approach the Bluetooth

according to the need for such frequent Bluetooth packet transmission using the Bluetooth SCC 3.75 meters/s. It becomes difficult to adjust 902.11 communication links and voice transmission example and with which the belt was equipped. Bluebooth supports the voice communication which used the synchronous system connection mold (SCO) packetized voice transmitted at communications protocol between the terminals and head sets which the user puts on, for (0009) In addition, it is desirable to propers the voice service which used the Bluetooth

coincidence the edjustment technique which ensures to operate robust with the same frequency of the equipment which follows, for example, becames possible by Bluetooth and 802.11 use for Problem(s) to be Solved by the invention] it is the purpose of this invention that the both sides

to said 1st communications protocol, and the 2nd wireless trussociver which operates according uses a frequency band (they are 2.4GHzSM bands), the base station which operates according the 1st communications protocol (they are 802.11 protocols). The 1st wireless transcoiver which Means for Solving the Problem] The gastalt of operation of this invention operates according to

> transcriver de-energize, the 2nd wirebss transcriver was made to energize, and it has the beso station, and in order, make the 1st wireless transceiver energize, made the 1st wireless to the 2nd communications protocol (it is the Bluetooth protocol) — and it is combined with the regulator for making the 2nd wireless transcolver de-energize.

be equipped, and to transmit bar code information to the 2nd transceiver, a printer, or personalprotocol. It is possible for the scanner to be contained in the slave unit, and for a user's finger to deta management equipment transperiver and 1 or the slave unit beyond it operates according to the 2nd communications housing suitable for equipping a beit, a laptop computer, or PDA. It is combined with the 2nd [0012] The 1st wireless transceiver and the 2nd wireless transceiver are carried in [both]

wireless transceiver. de-energize while the 1st wireless transceiver uses it, it has the regulator combined with the 1st transceiver. Furthermore, in another arrangement, in order to make the 2nd wireless transceiver used also by the 2nd transceiver into the 2nd wireless transceiver is used by the 1st wireless arrangement, it has the look ehead function for judging whether 2 or the sub-band beyond it transcaiver uses one more of two or these the two sub-bands or more. Moreover, in snother profocal transceiver uses one of two or the two sub-bands or more, and the Bluetooth protocol enother equipment, it has two or two sub-bands or more in said frequency band, a 802.11 the Blustooth protocol transceiver transmits with the power level of about OdBm. Moreover, in rectangular polarization in the arrangement carried in [both] housing. By another arrangement [0013] The 1st transceiver and the 2nd transceiver can be equipped with the antenna of

communication protocol is controlled to operate only between the quiescent times of said 1st which this data communication unit communicates with it by it. The actuation by the 2nd date equipment with the 2nd communications protocol, and controls actuation of the abve unit to communication signal using said 1st protocol. A data communication unit operates as master with the quiescent time to which neither transmission nor reception cerries out a data signal and equipment operate in the power reduction mode of the 1st communications protocol used for this data communication unit, and transmitting and receiving a data communication communications protocol is shown. The action time for the 1st communications protocol being unit which trees the 1st wireless data communications protocol and the 2nd wireless data [0014] According to this invention, the approach of operating the portable data communication

an access point performs data communication in power reduction mode between the 1st time the 1st data communication protocol. An access point is controlled to avoid the night message of an allocation time interval, and a portable type unit answers a comprehensive ready-forinsediately, in the gestalt of another operation, the 1st time interval may not be made not to be 3rd time interval using the 1st wireless protocol. The 1st time interval can follow a beacon signa 2nd communications protocol, and an socess point performs data communication between the interval, on access point performs data communication between the 2nd time interval using the [0017] In the gestaft of 1 operation, the beacon signal period is divided into three time intervals between allocation than intervals, and it operates so that radio may be performed. sending shiffly signed, functions as mester equipment which uses the 2nd wireless protocol transmitting a signal between the time intervals distributed by it in the beacon signal period usin sbifty signal from an access point by the 1st wireless protocol, and a portable type unit by the 1st wirdess protocol it has prevented transmitting a comprehensive ready-for-sending protocal (It is Blustooth) is shown. A periodic bescon signal is transmitted from an access point type unit may perform other equipment and wireless date transmission using the 2nd wireless approach of operating the wireless data telecommunication system arranged so that a portable communications protocols are 802.11 protocols. The 2nd radio protocol is Bluetooth. predeteratined thine interval is established in order to end actuation with the 2nd data type unit cambined with the access point using the 1st wireless protocal (It is 802.11), and the [0016] In enother side face of this invention, it has one occase point and at least one portable communication protocol between these predatermined time intervals. The 1st wireless data [0015] In the gestellt of 1 operation, the signal which shows that action time begins following a

JP,2002-185476,A [DETAILED DESCRIPTION]

[0018] According to another side face of this invention, the method of operating a data telecommunication system using a master—slave protocol (it being (the Bluetooth)) is shown, a moster transceiver transmits to a stave unit between the 1st even number time slots, a slave unit is transmitted to this master equipment between odd number time slots, and transmission follows the frequency hop pattern predetormined at the hop rate corresponding to a time slot. Moster equipment operates so that an interference signal may be detected on the frequency corresponding to the following time slot in the 1st hour of each time slot. When an interference signal detected between either of the time slots before current or it, the transmission by the master transactor is farbidden between even number time slots.

[0018] The actuation phase includes adjusting so that a signal may be received corresponding to the frequency distributed to the time slot to which master equipment follows a degree in suitable operation, detecting the reinforcement of the received signal, and readjusting so that a signal may be transmitted and received corresponding to the frequency on which master equipment is distributed to the current time slot.

(0020) In another side face of this invention, the approach for giving voice communication to the wirefess data telecommunication system equipped with the portain type unit which is arranged so that it may communicate with an access point using the fet data communication protocol (it is (like 802.11)), and is arranged so that it may communicate with other equipments using the 2nd data communication protocol (it is (like 802.11)), and is arranged so that it may communicate with other equipments using the 2nd data communication protocol (it is (like 802.11)) is shown. The fet data communicate protocol is used for the data corresponding to voice communication and sportable type unit. The data corresponding to voice communication communicate between a portable type unit and portable equipment using the 2nd communication communicate between a portable type unit.

deta communication protocol. The communication fink is arranged with a time interval which avoids a communicative interference using the fet data communication protocol. A sound signal is changed into the data corresponding to this sound signal, and the data signal corresponding to a sound signal, and the data signal corresponding to a sound signal and the data signal corresponding to a sound signal in portable equipment.

(0021) in suitable equipment, the data corresponding to a sound signal are compressed sound signal data. As for the communication list between a portable type unit and portable equipment is in desirable to use the Blackocth ACL list.

The configuration of the Charlest ACL list.

(D022) According to another side feco of this invention, it is arranged so that it may communicate using the 1st and 2nd data communication protocol which operates in the same frequency band (it is tike 802.11 and Bluetooth)), and it is combined with an access point, and the approach for operating the portable type unit which came to receive from there the baccon signal which divides a time interval clearly with the 1st communications protocol is shown again. A signal is received from the access point (it is (like a CTS signal)) which specifies a part of one time interval which inhibits the transmission for which the portable type unit combined with the access point uses the 1st data communication protocol. A portable type unit operates as master equipment, in order to communication with a slave unit in between for a specification part [ time interval ] using the 2nd data communication protocol.

[0023] According to another side face of this invention, it has at least one access point and at least one portable type unit again. A portable type unit communicates with an access point within the 1st frequency band using the 1st wireless data communications protocol (it is (file 802.11)). The approach for operating the wireless data network arranged so that it may communicate with other equipments within the 1st frequency band using the 2nd wireless data communications protocol (it is (file Bluetooth)) is shown. The signal (it is (file OTS)) transmitted from an access point in the 1st communications protocol specifies the time amount which has inhibited that the portable type unit combined with the access point transmits using the 1st data communication protocol access point may be approached by the unit operates in order to perform the equipment and wholess data transmission which operate as a slave unit between said exsignment time amount as mester equipment using said 2nd data communication protocol basides the above.

[0024] According to add frice of this invention markhay arms.

[0024] According to side face of this invention enother spain, the approach for operating the portable type unit entempted so that it may communicate using the 1st data communication protocol and the 2nd data communication protocol which operate within the same frequency

band (it is (like 802.11 and Bluetooth)) is shown, and a portable type unit is combined with an access point them. The portable type unit has received the 1st and 2nd adjustment signal using the 1st data communication protocol. A portable type unit operates as master equipment corresponding to the 1st adjustment signal, and performs a slave unit and data communication using the 2nd data communication protocol. The communication link by the portable type unit which uses the 2nd data communication protocol answers the 2nd adjustment signal, and is interested.

[0025] (Gestalt of Implementation of Invention) two or more base stations [desking 1]—or—physical—the cable metwork 10—connection 40 and the access point (AP) carried out 50—20 and 30 are shown. Although a cable network with the access point of a large number connected to CPU12 is a typical example of application, a system can also use a single computer and single AP. Each AP is equipped with the equipments 60 and 70 for transmitting a radio frequency (NF) signal and receiving under 802.11 protocols. moreover, 802.11 protocols—using k—two or more wireless transceivers or a portable type unit (MU)—120 and 140 communicate using equipments 80 and 90 for transmission of a RF signal, and reception. Each MU 120 and 140 is combinable with a wireless transceiver again, this wireless transceiver is the Buetooth master (STM) equipments 130 and 150, and both those equipments form the dual mode equipment 100 and 110. The combination between MU and STM is made by, for example, hobbing in the same equipment physically. The example of the dual mode equipments 100 and 150 are 150. The example of the dual mode equipments 100 and 150 and 150 are 150 and 150 are 150 and 150

[0026] Each BTM 130 and 150 is communicating with 1 or the Bluetooth stere (BTS) equipments 160, 170, 160, 190, 200, and 210 beyand it via the Bluetooth protocol. The Bluetooth protocol is established so that each BTS may combine with BTM uniquely. Therefore, BTS one A160, BTSB170, and BTS1C180 communicate only with BTM1130 using RF signals 220, 230, and 240 as explained. This forms the pico network 280. Therefore, BTS two A190, BTS28200, and BTS2C210 communicate with BTM2150 using RF signals 250, 260, and 270. This forms the pico network 290. The examples of BTS are a cordiess ring scanner, a printer, and personal-data management equipment.

[0027] When there is no adjustment, what it is going to operate when MU 120 and 140 combined with 87M 180 and 150 and these is completely the same happens. In order that these two equipments may operate with the same 2.4GHzISM band, when it will interfere in BTM 130 and 150 and MU 120 and 140 violently mutually and they are held especially in the dual mode equipments 100 and 140 violently mutually and they are held especially in the equipmenta. One of such the equistment approaches is mainly suitable in the environment controlled especially based on time multipled transmission of 802.11 and 87 wireless (for example, when 802.11 and 87 wireless are held in the same terminal or dual mode equipment), in the gastaft of a cartain operation, the Blustooth system becomes possible or impossible with global/central signal from 802.11AP explained hare. A central signal is also adjusted without education with AP between boro equipments.

(0028) Furthermore, in the justaft of enother operation, the dust mode equipments 100 and 110 are designed so that 802.11 antennes 80 and 90 may become rectangular polarization about the Bluetooth antenna made to generate RF signals 220, 230, 240, 250, 280, and 270. With this technique, protection additional about 802.11 Bluetooth interference is given, and the need for CG is lest.

[0029] <u>Deserting 8</u> shows an example of the rectangular polarization entenna used in order to decrease interfamence. The antenna structure of <u>framing 8</u> contains the unipolar antenna 502 of perpendicular polarization connected to the transmitter/receiver by transmitting Rhine 510 out of balance. This structure contains the bipolar antenna of concurrency polarization equipped with the bipolar arms 504 and 508 connected to the transmitter/receiver by transmitting Rhine 508 which was able to take before again. This contractor will have it recognized that the entenna army of much other rectangular polarization is used.

[0030] in the gestalt of enother operation, BTM 130 and 150 is designed so that it may transmit to a relative target lower than 068m with low power level. This technique can give additional protection to 802.11 Bhatooth interference, and it can be used for it with other anteress or

JP.2002-185478.A (DETAILED DESCRIPTION

frequency regulation approaches which were explained here.
[0031] In the gestelt of another operation, it can design so that 802.11AP 20 and 30 and MU 120

The second of entering the management of the design at that 802,11AP 20 and 30 and MJ 120 and 140 120 and 150 and 150 and 161 170, and 150 and 150 and 150 and 170, 170, 180, 200, and 210 can be designed at that it may operate in other parts of 2,4GHz confirms.

(0032) BTM 130 and 150 can be equipped with the look shead function to judge whether which frequency in 2.4GHz is used about two or two Bluetooth frequency hop or more which will be generated in the future, in the gestaft of snother operation. When BTM 130 and 150 judges that the same frequency as 802.11 systems are using it in two or two following frequency hop or more is used, BTM 130 and 150 makes an output a rull and decreases the interference transmission of 802.11 according to it. By using this approach, Bluetooth and the interference between 802.11 according to it. By using this approach, Bluetooth and the interference between 802.11 according to it. By using this approach, Bluetooth and the interference between 802.11 are decreased or removed by dropping the packet of a lot, when duplication of a channel affect. This coping with method is also extensible so that even 802.11 transmission and tharbing of the edge-cant channel in which it may interfere may similarly be included.

[0033] Bluetooth is frequency-hopping diffusion spectrum which hops still more quickly than although all interfere that it is successful to the state of the second all interfere that it is successful.

(LUAS) Silvetdoth is troquency-hopping diffusion spectrum which haps still more quickly than simost all IEEE802.11 wireless. (FHSS) Wireless is used. Bluetooth transmits a short packet, pling up in a prodetermined frequency. Almost of IEEE802.11 wireless hope late and transmits a longer packet. Moreover, it does not hop but there is also a version of IEEE802.11MLAN which uses the direct sequence 650 sions apactrum (DSSS) which makes a private use of a large band. (D0SA) As a result, during transmission of an IEEE802.11 packet, the Bluetooth radio hops between many frequencies and transmits a packet to each frequency potentially. These Bluetooth packets may interfere with an IEEE802.11 packet, and may cause the error of an IEEE802.11 packet. It is necessary to retransmit a massage to an IEEE802.11 packet and a may cause the error of an IEEE802.11 packet. It is necessary to retransmit a massage to an IEEE802.11 packet and a may cause the error of a IEEE802.11 packet and may cause the error of an IEEE802.11 packet and may cau

operates in the IEEE02.11MLAN environment, and which equipment. Since the technique detects the equipment currently environment, and which equipment. Since the technique detects the equipment currently environment with 2.4GHzISM bands, it can also be used in order to prevent interference with other equipments in the band.

The product of the equipments in the band.

[0038] The Elestooth network is constituted by the Electooth equipment to eight pieces which operats in a pico network. The pico network is equipped with one master and the slave to seven pieces. 1600 hap comes out compensively per second, and said all Bluetooth equipments in a pico network hap all at once. The time excurnt to which a frequency happer piles up in a specific frequency is called a slot time. At this rate of hap, a slot time is 625 microseconds. Usually, although a pecket is completed within 1 slot time, it is also possible to have 3 to 5 slot packet. A reserve and a slave transmit by turns, a master is an even number slot and a slave is transmitted by the odd number slot. Please refer to the Bluetooth specification version 1.0 on December 1, 1899 which incorporates the whole here by citation.

[0037] The link of two types is between the muster equipment in the Biketooth pice network, and each slave unit. First, there is an exynchronous uncombined link (ACL) used for data transmission. Next, there is a synchronous system connecting link (SCO) used for transmitting voice data. The mester of a pice link determines when the data on an ACL link are transmitted Data are transmitted, when this mester has data transmitted to a slave, or when this mester wants to receive data from a slave.

[0038] Each Bloatboth equipments in a pico natwork frequency hop all at once according to a faibe random sequence, <u>drawing 5</u>— sequence [ of a frequency ] f (1), f (2), and \_ f (n) — the equipment which hope along with \_ is shown. Moreover, in order that this drawing may change the frequency synthesizer of wireless at a new frequency and the transmitting period for 403 microseconds, it is shown how the slot time includes the period for 220 microseconds for 625 microseconds.

[0039] As explained above, between even number slot T (f), a master transmits to a slave, and a sizve returns transmission to a master between odd number afot R (f). A master can be transmitted in all even number time slots. A slave can be transmitted to a master in a time slot, only when a master carries out packet transmission in a front time slot et a slave. When a master does not transmit data to all the slave in a slot (n), either, any slaves cannot perform

transmission in a stot (p+1). The exception of this regulation is a thing about a SCO link packet, and data are always transmitted at the predetermined periodic specing in this case. Therefore, about an ACL link, when a master does not transmit data, a share does not transmit data. [0040] In current, a pice network master does not presuppose that it will judge whether other equipments use spectrum before their transmission. When there is an IEEE802.11 packet by which current transmission is carried out as the result, the Blustooth master does not dare check whether an alien system is transmitting, and coincidence and when possible, also itself, it transmits on the same frequency. As a result, the Blustooth master may interfere with an Iteratory it is actionally to the same frequency.

IEEE802.11 packet and unsuitable reception of a packet may produce it.

(D041) Subdividing the alignment time interval for 220 microseconds at some division periods, spending some of the time account, since the following frequency is foreseen, and checking whether other equipments are transmiting by those charmels is proposed. It is because this master has cleared stave \$1 and it transmits between the next time slots of a frequency { (n+1), when, as for the reason for foreseeing, a master transmits a message to slave \$1 in frequency f (n+1), when, as for the reason for foreseeing, a master bransmits a message to slave \$1 in frequency f (n). Therefore, a master needs to foresee the frequency corresponding to the following time slot. The time interval for 220 microseconds is subdivided as follows, in 80 microseconds of the beginning, the newstored of the frequency synthesizer of a master is carried out to \$ (n+1), and a master hears the signal in the band in the following 80 microseconds. This is executable by using the standard receiving annurciator (RISSO) on the strength in a walker-table. And in the following 80 microseconds, a frequency synthesizer carries out the re-stroke of the wirefess to \$f(n), however, the restriction of the wirefess to \$f(n).

[0042] It investigates whether just before receiving on a frequency f (n-1), the frequency band of a master of f (n) is clear. Moreover, before transmitting by frequency f (n), a master checks that a frequency band f (n+1) is clear again. If frequency band f (n) and f (n+1) are clear, a master will enable a stave to transmit in frequency band f (n), consequently to transmit with a frequency band f (n+1) in the following time slot.

[0043] A meeter investigates the frequency band similarly used for transmitting in the following time interval between time slots R. Transmission will not be performed if the time slot is occupied.

comprehensive ready-for sending ability, in order to intercept all 802.11 communication links at a NAV (network allocation vector) period. (OTS) A signal is transmitted. The pico networks 280 for 802.11 continuation recognition mode (CAM) MU (not shown) which operatos with 802.11 communication Ents. The runaining time emount (up to the following beacon 380) becomes only NAV period 320, BTN 130 and 150 walkie-takies become incompetent, and also and all BT by which \$02,11MU 120 and 140 is combined with them at this time. After termination of the 350 and 370 by BTM 130 and 150 (for Rt to held in the scane dual mode equipments 100 and 110) and 280 combined with these BTM(s) 130 end 150 enable it to start the BT communication links according to 902.11 protocal. Once all PSPMU(s) 120 and 140 receivs a packet, AP20 is beacon), PSPMU 120 and 140 performs reception of a packet, and transmission at this period traffic property and the need for equipment (for example, time ensure marginal service), to 802.119SPAU(s) 120 and 140 which ensits in this period (some PSPMU(s) ensite with a different initiation of each beacon time amount 300, AP20 transmits the beacon signal 350 to depends for the persistence time of a time interval T, 1802.11(PSP, UNAV, and 1802.11CAM on a tHAY320, and 802.11 communication links with activity mode CAM called (802.11CAM300, it La, the power reduction (PSP) mode of t802.11PSP310, a Bibetooth communication link called shown in <u>drawing 1</u> . Here, enother technique of transmitting adjustment is shown. The 802.11 bescan time interval T300 is divided into 802.11 communication links with three time intervals. [DM4] Next, the schemetic diagram of drawing 2 is referred to in relation to the concrete layou

[0045] In the gestalt of another operation, when MJJ does not operate in PSP mode, 802.11PSP310 time interval may be omitted. Here, the CTS signal 340 carries out the trigger only of a time interval tHAV320 and £802.11CAM330 in the 802.11 beacon each period T300, [0046] In the gestalt of another operation, when MJJ does not operate in GAM mode, £802.11CAM330 time interval may be omitted. Here, the CTS signal 340 carries out the trigger

only of the tNAV320 and t802.11PSP310 time interval in the 802.11 beacon each period T300. [D047] the gestaft of another operation — setting — the Bluetooth system — instead of [ from AP20 ] — global/central signal from the dual mode equipments 100 and 110 — possible-izing — or it is made impossible.

BTS 160, 170, 190, and 200. Then, MU120 sets communication link 460 to AP20 in the new example, about 4 microseconds is needed by this warning before access. By this warning, BTM the stop signal 420 which audities that MU120 has taken ever access to a medium to BTM 130 or 440 communication links to each BTS 180, 170, 190, and 200, When "it empkes" in order for 602.11470, and resuming power saving mode, MU120 will communicate a start signal 410 to 87N 130 and 150. And BTM 130 and 150 visus BT protocol between periods 18T480, and starts 430 period t802 11480. and 150. Before MU120 needs exchsive use of a madium, it warns BTM 120 and 150 of it, for 130 and 150 completes some predict transmission, and suspends each communication link with 802.11 protocols. If ready for whose MU's 120 ending the communication link of a period the communication link with the Bluetooth stave. This technique is useful expecially when all transmission. Once 602.11MU completes a communication link, the Bluetooth master can resume access about the pico network. Therefore, a slave is also stopped when a master suspends In case an asynchronous uncombined (ACS) packet is used, the Bluesboth master adjusts suspends transmission of a message to the Bhietooth sieve to one or all the Bluetooth meeters signed 400 is transmitted to BTM 130 and 150, And NU120 communicates 450 with AP20 using [DM9] When MU120 desires 802.11 communication flak initiation as shown in <u>drawing 4</u> , a step 802.11MU is in PSP mode. It is because these equipments are in hait mode in almost all cases. Bluetooth network operatos through the course of normal until it directs it that 802.11MJ 902.11AP does not need to adjust transmission between Bluetooth and 802.11. To instead of, the diagram of <u>digning 4</u> in relation to the concrete layout shown in <u>drawing 1</u>. In this approach [0048] The gestalt of another operation of this invention is explained about said schematic 20802.MJ 11 terminal to transmit data or to hear 802.11 beacon from AP20, MJ/120 transmits

[0050] In the gestalt of another operation, periods t802.11480 and t8T480 are predetermined specing fixed through the communication link process. In the gestalt of another operation, periods 1802.11480 and t8T480 are the die length of the same time amount.

[0051] In the gestalt of another operation, it is the voice sending set designed in order that BT

[0051] In the pestalt of another operation, it is the voice sanding set designed in order that BTS 180, 170, 180, 180, 200, and 210 might transmit a head set or voice data to BTM 110 and 130, and voice data is transmitted via 802.11 network next. Speech information is usually transmitted on the Blustooth natwork using a periodic generator lock orientation (SCO) protocal. This protocal does not flow to transmission interruption required to adjust with actuation of 802.11, in case Blustooth and 802.11 are used, it is more efficient to transmit voice in the Blustooth network using the ACI, protocal usually saved for data transmission. In order to use the ACI, protocal which which the Blustooth piloo networks 280 and 280 are usually saved for data transmission in order to use the voice transmission on Blustooth, when used with the frequency regulation technique currently indicated here, it is necessary to compress speech information and to clongsto.

[0052] Reference of <u>drawing 1</u> and <u>drawing 8</u> shows the voice communication system 520 containing the head set 521 equipped with the BTS radio equipment 210 which communicates with a dual mode pertable type unit using BT protocol. The head set 521 is equipped with the comphere in the asero housing as the wheters unit 210 and a microphone 522. The portable type unit 110 can be arranged so that it may be used equipping a user's belt BTS210 is equipped with D-A and A-D converter 528 for [ the ] changing conversely for the microphone 522, the comphere 524, and the sound signal to the digital signal again as shown in <u>drawing 8</u>. The digitized sound signal is compressed, is arranged by the packet by the processor 528, and is transmitted using the RF module 530 and an antenna 532. A reverse process is used for reception of a signal. The RF module 530 communicates with MU110 in ACL mode using BT protocod.

(0053) I hear that the Bhuetooth equipment of low power ensures 802.11 equipments of high power being interlocked with and schadly operating, and another problem produced by the

invention, without separating from the pneuma of this invention. out and modification of all them and correction belong within the Enits of the buth of this recognize that other modification and correction are made, which will exist, and which it cernies been explained, this contractor is an intention which comes out and charges the thing which car that the Bluetooth pice network 290 was established as a matter of fact. Termination of a Once it is established, the pico network 290 will start a light 540, in order to guarantee to a user nothrork 250 can avoid the interference from 602.11 equipment, and can establish actuation. time-out centinues for 10 seconds. By this time-out, during a timeout period, the Bluetooth pico (1054) although what is considered to be the gestalt of suitable operation of this invention has timeout period uses other approaches for the frequency regulation explained here. beforehand to the portable type unit 140 — it needs (time-out) — it directs. For example, this the connection carbon button 500 will stop the night message of the time emount defined substantially the same as that of a part of drawing 1, and the connection carbon button 500 and enother operation of this invention is explained with reference to graving 2 . Desiring 2 is light. 540 which were prepared on AU140 of 802.11 natworks are added. Dual mode equipment attempt which adjusts 602.11 and Bluetooth equipment has it. In this point, the gestalt of 110 is specifically equipped with the connection carbon button 500, if it operates by the user,

[Translation done.]

JP.2002-185476,A [PRIOR ART]

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# TECHNICAL FIELD

[Field of the Invention] This application changes the profits of temporary application of the sorial numbers 60/175,282 of January 10, 2000 presentation, and temporary application of the serial numbers 60/186,978 of April 13, 2000 presentation. If this invention is further specified about a wireless data network, it relates to the equipment for guaranteeing coordistance between the wireless networks which share the same frequency band as a different actuation protocol.

[Translation dome.]

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### PRIOR ART

[Description of the Prior Art] Radio equipment communicates mutually using the protocol which is transmitted in a predetermined frequency band and on which it has agreed. The equipment which uses one or the wireless protocol beyond it operates by transmission in the same frequency band in many cases. Therefore, in order for the equipment which uses one or the wireless protocol beyond it to operate efficiently within the same frequency band to coincidence, it is necessary to develop adjustment technique.

(NOCS) For example, the grantee of this invention supplies the wireless data telecommunication system following the IEEE802.11 standard (802.11) communications protocol incorporated have

by citation known as spectrum (Spectrum) 24 (trademark). If this system is carried ead, a

portable type unit (MU) will consider data communication as a central computer through one or the access point beyond it (AP). AP communicates with a computer through a direct or Ethernet (tridemark) cable network. Each of MU is combined with one of the AP. This communications protocol is using the 24GHzISM band as defined as 802.11.

[D004] In that by which the current design is corried out, in order that 802.11 equipment may work as a wireless Local Area Network, some predstamined approaches will be used for the trustatission in a 2.4GHz band. One approach is using a frequency-happing officiation spectrum (FHSS) mechanism, in it, time amount transmission is corried out and data continus transmission in a channel which has been set to the specific channel and which is different by the die length of predstamined time amount similarly following a false random sequence. 802.11 equipments designed now operate at the rate of cycle hap of 10 hop per second. Another approach is using a first equipment of the predstamined cycle channel, and the multiplication of the pseudo-random chipping sequence between transmission is carried out.

[0005] Since all 802.11 equipments are using the same ISM frequency band, the interference in these equipments is minimized by use of a subcarrier sensing multi-access / collision-prevention (CSMA/CA) protocal. Under CSMA/CA, he asks whether 8021.11 equipment has the transmission from snother equipment, before starting its transmission. If other transmission is not detected, equipment transmits its information and weats for the acknowledgement (ACK) from receiving-side equipment. When reception acknowledgement is not received, after with a predetermined time interval after waits for equipment between the time intervals chosen at random, it transmission to caincidence, and when interference produced as a result hars all transmission, in order that each equipment may try retransmission of missagn, it will wait for it the time chosen at random. This enables equipment to transmission of missagn, it will wait for it the time chosen at random. This enables equipment to transmission of missagn, it will wait for it the time chosen at random. This considers equipment to transmission of missagn, it will wait for it the time chosen at random. This

[0008] Another example of the wireless specification which similarly uses said 2.4GHz/SM frequency band is Bluetooth (trademank), and this is designed for the communication link between the equipment within the narrow limits transmitted with lower power level. The Bluetooth specification is available at www.bluetooth.com. Bluetooth is operating at a rate of 1800 hap per second using a frequency hopping diffusion spectrum mechanism as designed now. Bluetooth uses communicative master/slave system. An example of the Bluetooth network is a portable type unit with which the belt of the user who communicates with the cordeess scanner.

with which reads a bar code and a user is equipped as a ring is equipped in this case, a portable type unit operates as a master and a cordines ring scarner operates as a stare. In the system for this data transmission, a master and a stave communicate only in prodetermined spacing. At the 1st spacing, a master communicates to the 1st stave unit and the 1st stave with enswers only between the 2nd spacing. At the 3nd spacing, a master communicates to the 2nd stave unit and the 2nd stave unit answers only between the 4th spacing by using this system, it is one equipment in specific Bluetooth." a pice network."— it becomes certain that an injury transmits to appending this amount. Therefore, interference is minimized.

communications protocol until now did not exist. ensure operating within the same frequency bend with the minimum interference, the adjustment expression of use of such radio equipment in the same frequency which operates under a different 802.11 or Bluetooth was designed so that the equipment which uses the same protocol might other Bluetooth file a printer or a head set again. Although a communications protocol lito terminal moods to communicate with the peripheral device which becomes possible according to wearing terminal. And bar code information is transmitted to 802.11AP, and acknowledgement. scans a bar code using a cordicas ring scanner, bar code information will be transmitted to a belt protocols, it may be desirable to use the cordless ring scanner which is using the Bluetooth networks of the same protocol is recognized in the industry. For exemple, while the terminal with protocol which uses the same frequency band with the need of approaching and operating many and probably a message needs to be transmitted to a belt wearing terminal from AP. This protocol and which communicates with the same belt wearing terminal. For exemple, once a user which the belt was equipped is communicating with the access point which uses 802.11 working by this, for example can own each portable type unit with a cordees ring scenner. (0008) The need of adjusting transmission of the equipment which operates under a different separate Bluetooth pico network is minimized. Many individuals who approach mutually and are came to operate on the same frequency as coincidence. Therators, the interference during the channel from which 79 used by Blustooth differed, so a different Blustooth natwork is hard to pico network which another object separated, and to operate. It is because there is a cycle (0007) In addition, as for one Bluetooth pico network, it is desirable to approach the Bluetooth

IDXR9] in addition, it is desirable to prepare the voice service which used the Bluetooth communications protocol between the terminals and head sets which the user puts on, for example and with which the balt was equipped. Bluetooth supports the voice communication which used the synchronous system connection ordel (SCR) pedictized voice transmitted et 3.75 meters/a. It becomes difficult to edjust 802.11 communication links and voice transmission seconding to the need for such frequent Bluetooth pecket transmission using the Bluetooth SCR.

[Translation done.]

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# TECHNICAL PROBLEM

(Problem(s) to be Solved by the Invention) It is the purpose of this invention that the both sides of the equipment which follows, for example, becomes possible by Bluetooth and 802.11 use for coincidence the adjustment technique which ensures to operate robust with the same frequency band.

[Translation done.]

JP 2002-185478.A [NEANS]

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[Means for Solving the Problem] The gestaft of operation of this invention operates according to the 1st communications protocol (they are 802.11 protocols). The 1st wireless transcolver which uses a frequency band (they are 2.4GHz/SM bands), the base station which operates according to said 1st communications protocol, and the 2nd wireless transceiver which operates according to the 2nd communications protocol (it is the Blustooth protocol) — and it is combined with the base station, and in order, make the 1st wireless transceiver energize, made the 1st wireless transceiver do-unorgize, the 2nd wireless transceiver was made to energize, and it has the regulator for making the 2nd wireless transceiver do-unorgize, the 2nd wireless transceiver do-unorgize, and it has the regulator for making the 2nd wireless transceiver do-unorgize.

(DD12) The 1st wireless transceiver and the 2nd wireless transceiver are carried in [ both ] housing suitable for equipping a ball, a laptop computer, or PDA. It is combined with the 2nd transceiver and 1 or the slave unit beyond it operates according to the 2nd communications protocol. It is possible for the scanner to be contained in the slave unit, and for a user's finger to be equipped, and to transmit bar code information to the 2nd transceiver, a printer, or personal-data management equipment.

[00/3] The 1st transceiver and the 2nd transceiver can be equipped with the antenna of roctangular potarization in the arrangement carried in ( both ) housing. By another arrangement, the Bluebooth protocol transceiver transmits with the power level of about 0dBm, Moreover, in another equipment, it has two or two sub-bands or more in said frequency band, a 802.11 protocol transceiver uses one of two or the two sub-bands or more, and the Bluebooth protocol transceiver uses one more of two or these the two sub-bands or more. Moreover, in another arrangement, it has the look ahead function for judging whether 2 or the sub-band beyond it used also by the 2nd transceiver into the 2nd wireless transceiver used by the 1st wireless transceiver. Furthermore, in another arrangement, in order to make the 2nd wireless transceiver do enoting while the 1st wireless transceiver while the 1st wireless transceiver uses it, it has the regulator combined with the 1st wireless transceiver.

(0014) According to this invention, the approach of operating the portable data communication unit which uses the 1st wireless data communications protocol and the 2nd wireless data communications protocol being communications protocol being used for this data communication unit, and transmitting and receiving a data communication sprotocol used for this data communication unit, and transmitting and receiving a data communication protocol signal and equipment operate in the power reduction mode of the 1st communications protocol with the quiescent time to which neither transmission nor reception carries out a data communication signal using said 1st protocol. A data communication unit operates as master equipment with the 2nd communications protocol, and controls actuation of the slave unit to which this data communication unit communicates with it by it. The soluzation by the 2nd data protocol is controlled to operate only between the quiezoem times of said 1st protocol.

(2015) In the gestalt of 1 operation, the signal which shows that action time begins following a prodetermined time interval is established in order to and actuation with the 2nd data communication protocol between these predetermined time intervals. The 1st wireless data communications protocols are 802.11 protocols. The 2nd radio protocol is Bluetnoth. [2016] In another side face of this invention, it has one access point and at least one portable.

inspeciately. In the gestalk of another operation, the 1st time interval may not be made not to be 3rd time interval using the 1st wireless protocol. The 1st time interval can follow a beacon signal and communications protocol, and an access point performs data communication between the interval, an access point performs data communication between the 2nd time interval using the an access point performs data communication in power reduction mode between the 1st time [0017] In the gustait of 1 operation, the beacon signal period is divided into three time intervals between effection time intervels, and it operates so that radio may be performed. sending shifty eigral, functions as master equipment which uses the 2nd wireless protocol of an affocation time interval, and a portable type unit enswers a comprehensive ready-forthe 1st data communication protocol. An access point is controlled to avoid the night massage transmitting a signal between the time intervals distributed by it in the beacon signal period using shilly signal from an access point by the 1st wireless protocol, and a portable type unit by the 1st wireless protocol it has prevented transmitting a comprehensive ready-for-sending protocol (it is Bibetooth) is shown. A periodic beacon signal is transmitted from an access point type unit may perform other equipment and wireless data transmission using the 2nd wireless approach of operating the wireless data telecommunication system arranged so that a portable type unit combined with the access point using the 1st wineless protocol (it is 802.11), and the

[0016] According to another side face of this invention, the method of operating a data telecommunication system using a master salwe protocod (a being (like Bluetooth)) is shown, a master transceiver transmits to a slave unit between the 1st even number time slots, a slave unit is transmitted to this master equipment between odd number time slots, and transmission follows: the frequency hop pattern predetermined at the hop rate corresponding to a time slot. Master equipment operates so that an interference signal may be detected on the frequency corresponding to the following time slot in the 1st hour of each time slot. When an interference signal is detected between either of the time slots before current or it, the transmission by the master transceiver is forbidden between even number time slots.

[0018] The activation where includes the slots of the slots of the slots of the slots.

[0018] The actuation phase includes a fjusting so that a signal may be received corresponding to the frequency distributed to the time slot to which mester equipment follows a degree in suitable operation, detecting the reinforcement of the received signal, and readjusting so that a signal may be transmitted and received corresponding to the frequency on which mester equipment is distributed to the current time slot.

[0020] in another side face of this invention, the approach for giving voice communication to the wireless data telecommunication system equipped with the portable type unit which is arranged so that it may communicate with an access point using the 1st data communication protocol (it is (Bite 802.11)), and is arranged so that it may communicate with other equipments using the 2nd data communication protocol (it is (Bite Blustooth)) is shown. The 1st data communication protocol is used for the data corresponding to voice communication, and they communicate between an access point and a portable type unit. The data corresponding to voice communication communicate between a portable type unit. The data corresponding to voice communication protocol. The communication link is arranged with a time interval which avoids a communicative interference using the 1st data communication protocol. A cound signal is changed into a sound signal to the data corresponding to the sound signal signal corresponding to a sound signal is changed into a sound signal in portable equipment.

[0021] In suitable equipment, the data corresponding to a sound signal are compressed sound signal data. As for the communication link between a portable type unit and portable equipment it is desirable to use the Bluetooth ACL link.

[0022] According to another side face of this invention, it is arranged so that it may communicate using the 1st and 2nd data communication protocol which operates in the same frequency bend (it is like 802.11 and Bluetooth)), and it is combined with an access point, and the approach for operating the portable type unit which came to receive from there the beacon signal which divides a time interval clearly with the 1st communications protocol is shown again. A signal is received from the access point (it is (like a CTS signal)) which specifies a part of one time interval which inhibits the transmission for which the portable type unit combined with the

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JP 2002-185476,A [MEANS]

equipment, in order to communicate with a clave unit in between for a specification part [ time eccess point uses the 1st data communication protocol. A portable type unit operates as master [0023] According to another side face of this invention, it has at least one occase point and at interval ] using the 2nd data communication protocol

protocol and the 2nd data communication protocol which operate within the same frequency band (it is (like 602.11 and Bluetooth)) is shown, and a portable type unit is combined with an which uses the 2nd data communication protocol arrawers the 2nd adjustment signal, and is using the 2nd data communication protocol. The communication link by the portable type unit corresponding to the 1st eductment signal, and performs a slave unit and data communication the 1st deta communication protocol. A portable type unit operates as master equipment access point there. The portable type unit has received the 1st and 2nd eductment signal using [0024] According to side face of this invention enother again, the approach for operating the portable type unit arranged so that it may communicate using the 1st data communication as waster equipment using said 2nd data communication protocol besides the above. wireless date transmission which operate as a slave unit between said assignment time amount communication protocol. A portable type unit operates in order to perform the equipment and inhibited that the portable type unit combined with the access point transmits using the 1st data communications protocol (it is (like Bluetooth)) is shown. The signal (it is (like CTS)) transmitted communicate with other equipments within the 1st frequency band using the 2nd wireless data from an access point in the 1st communications protocol specifies the time amount which has 802.11)). The approach for operating the wireless data network arranged so that it may within the 1st frequency band using the 1st wireless data communications protocol (it is (like least one partishe type unit again. A portable type unit communicates with an access point

is a pocket terminal with which a belt is equipped. grade equipments 100 and 110. The combination between MU and BTM is made by, for example, holding in the same equipment physicatly. The example of the dual mode equipments 100 and 110 Bluetooth master (BTM) equipments 130 and 150, and both these equipments form the dual communicato using equipments 80 and 90 for transmission of a RF signal, and reception. Each MU 120 and 140 is combinable with a wireless transcriver again, this wireless transcriver is the it — two or more wireless transcovers or a portable type unit (NU) — 180 and 140 frequency (RF) signal and receiving under 802.11 protocols, moreover, 802.11 protocols -- using and single AP. Each AP is equipped with the equipments 60 and 70 for transmitting a radio consected to OPUI2 is a typical example of application, a system can also use a single computer 20 and 30 are shown. Although a cable network with the access point of a large number physical — the cable network 10 — connection 40 and the access point (AP) carried out 50 — [DO25] (Castalt of implementation of invention) two or more base stations [ drawing [ ] — or —

management equipment nethrork 290. The examples of BTS are a cordissa ring scanner, a printer, and personal-data BTS2C210 communicate with BTM2150 using RF signals 250, 280, and 270. This forms the pico BTS18170, and BTS10180 communicate only with BTM1130 using RF signals 220, 230, and 240 as explained. This forms the pice network 280. Therefore, BTS two A190, BTS28200, and established so that each BTS may combine with BTM uniquely. Therefore, BTS one A180, [0026] Each BTM 130 and 150 is communicating with 1 or the Bluetooth slave (BTS) equipments 160, 170, 190, 190, 200, and 210 beyond it was the Stuetooth protocol. The Bluetooth protocol is

operation, the Bluetooth system becomes possible or impossible with global/central signal from BT wireless are held in the same terminal or dual mode equipment), in the greatest of a contact of such the adjustment approaches is mainly suitable in the environment controlled especially based on time multiplied transmission of 802.11 and BT wireless (for example, when 802.11 and equipments 100 and 110, they are so. Therefore, it is necessary to adjust two equipments. One 150 and MU 120 and 140 violently mutually and they are held especially in the dual mode equipments may operate with the same 2.4GHzISM band, when it will interfere in BTM 130 and with BTM 130 and 150 and these is completely the same happens. In order that these two (0027) Whon there is no adjustment, what it is going to operate when MJ 120 and 140 combined

by the odd number slot. Please refer to the Bluetooth specification version 1.0 on December 1, menter and a slave transmit by turns, a menter is an oven number alot and a slave is transmitted

**e**though a packet is completed within 1 stot time, it is also possible to have 3 to 5 slot packet. A pico nebwork hop all at once. The time amount to which a frequency hopper piles up in a specific

frequency is called a slot time. At this rate of hop, a slot time is 625 microseconds. Usually,

1999 which incorporates the whole here by citation.

802.11AP explained here. A central signal is also edjusted without adjustment with AP between

Bluetooth anterna made to generate RT signals 220, 230, 240, 250, 260, and 270. With this tachnique, protection editional about 802.11 Bhretooth interference is given, and the need for are designed so that 802.11 entermes 80 and 90 may become rectangular polarization about the [0028] Furthermore, in the gestaft of another operation, the dual mode equipments 100 and 110

100 PE 10

erray of such other rectangular polarization is used. which was able to take balance again. This contractor will have it recognized that the enterma the bipoter errors 504 and 606 connected to the transmitter/receiver by transmitting Rhine 508 of balance. This structure contains the bipclar antenna of concurrency polarization equipped with perpendicular polarization connected to the transmitter/receiver by transmitting Rhine 510 out decrease interference. The enterna structure of <u>drawing 6</u> contains the unipolar enterna 502 of [9029] <u>Drawing 6</u> shows an example of the rectangular polarization antenna used in order to

protection to 802.11 Stuetooth interference, and it can be used for it with other entermss or to a relative target lower than OdDm with low power level. This technique can give additional frequency regulation approaches which were explained here. [0030] In the pestalt of another operation, BTM 130 and 150 is designed so that it may transmit

and 140 may operate by a part of 240th; spectrum, but BTM 130 and 150 and BTS 160, 170, [D031] In the gestalt of another operation, it can design so that 802.11AP 20 and 30 and MU 120 180, 180, 200, and 210 can be designed so that it may operate in other parts of 2.4GHz

operate in a pico network. The pico network is equipped with one master and the slave to soven datacts the equipment currently emitted with 2.4GHztSM bands, it can also be used in order to [1008] The Biuetaoth network is constituted by the Biuetaoth equipment to eight pieces which prevent interference with other equipments in the band operates in the IEEE80211WLAN environment, and which equipment. Since the technique xiaces. 1900 hap comes out comparatively per second, and said all Bluetooth equipments in a may be again made into an invalid by the signal from the Eliveteeth wireless. [0035] This technique shown in <u>drawing 5</u> is usebbe also in which Bivetooth wireless which IEEE802.11 packet, it is necessary to retransmit a message to an IEEE802.11 packet and and it Bluetooth packats may interfere with an IEEE802.11 packet, and may cause the error of an between many frequencies and transmits a packet to each frequency potentially. These uses the direct sequence diffusion spectrum (DSSS) which makes a private use of a large band blanking of the adjacent channel in which it may interfere may similarly be included.

[D033] Bhaetooth is frequency-hopping diffusion spectrum which hops still more quiebly than smoot all IEEE802.11 wireless. (FHSS) Wireless is used. Bluetooth transmits a short packet. [0034] As a result, during transmission of an ISEE802.11 packet, the Bluetooth radio hops langer pecket. Mareover, it does not hop but there is also a version of IEEE802.11WLAN which pling up in a predetermined frequency. Almost all IEEE802.11 wireless hope lete and transmits channel arises. This coping with method is also extensible so that even 602.11 transmission and between 802.11 are degreesed or removed by dropping the packet of a lot, when duplication of a transmission of 802.11 seconding to it. By using this approach, Bluetooth and the interference more is used, BTM 130 and 150 makes an output a null and decreases the interferential action to the same frequency as 802.11 systems are using it in two or two following frequency hop or generated in the future, in the gestalt of another operation. When BTM 130 and 150 judges that frequency in 2.4GHz is used about two or two Bluetooth frequency hop or more which will be [0002] BTM 130 and 150 can be equipped with the look shead function to judge whether which

נכאואשון אים ובבפו באומיבה

[0007] The first of two types is between the muster equipment in the Bluetooth pico network, and each size unit. First, there is an asynchronous uncombined link (ACL) used for data transmission. Next, there is a synchronous system connecting link (SCO) used for transmitting voice data. The staster of a pico first datermines when the data on an ACL link are transmitted. Data are transmitted, when this muster has data transmitted to a slave, or when this muster vesues to receive data from a slave.

[0008] Each Biretooth equipments in a pice network frequency hop all at once according to a false rendom sequence,  $\underline{framing.5}$  — sequence [ of a frequency ] f (1), f (2), and \_ f (n) — the equipment which hops along with \_ is shown. Moreover, in order that this drawing may change the frequency synthesizer of wireless at a new frequency and the transmitting period for 405 microseconds, it is shown how the slot time includes the period for 220 microseconds for 625 microseconds.

(003) As explained above, between even number slot T (f), a master transmits to a clave, and a slave returns transmission to a master between odd number slot R (f). A master can be transmitted in all even number time slots. A slave can be transmitted to a master in a time slot only when a master carries out pecket transmission in a front time slot at a slave. When a master does not transmit data to all the slave in a slot (n), either, any slaves cannot perform transmission in a slot (n+1). The exception of this regulation is a thing about a SCO fink packet, and dots are slavely transmitted at the predeterminad periodic spacing in this case. Therefore, about an ACL link, when a master does not transmit data, a slave does not transmit data. [0040] in current, a pice network master does not presuppose that it will judge whether other equipments use spectrum before their transmission. When there is an IEEE802.11 packet by which current transmission is carried out as the result, the Bluetooth master does not dare check whether an after system is transmitting, and coincidence and when possible, also itself, it transmits on the same frequency. As a result, the Bluetooth master may interfere with an IEEE802.11 packet and unsultable reception of a packet may produce it.

(0041) Subdividing the alignment time interval for 220 microseconds at some division periods, spending some of the time amount, since the following frequency is foreseen, and checking whather other equipments are transmitting by those channels is proposed. It is because this master has cleared sieve \$1 and it transmitts between the next time sixts of a frequency f (n+1), when, as for the reason for foresecting, a master transmits a message to slave \$1 in frequency f (n). Therefore, a master needs to foresect the frequency corresponding to the following time sixt. The time interval for 220 microseconds is subdivided as follows. In 80 microseconds of the beginning, the re-stroke of the frequency synthesizer of a master is carried out to f (n+1), and a treater hears the signal in the band in the following 80 microseconds. This is executable by using the standard receiving amunicator (RSSS) on the strength in a walke-table. And in the following 80 microseconds, a frequency synthesizer carries out the re-stroke of the wireless to f (a).

<u>Premiss 5</u> shows the newly shown time—slot division.

[D042] It investigates whether just before receiving on a frequency f(n-1), the frequency band of a master of f(n) is clear. Moreover, before transmitting by frequency f(n), a master checks that a frequency band f(n+1) is clear again. If frequency band f(n) and f(n+1) are clear, a master will enable a stere to transmit in frequency band f(n), consequently to transmit with a frequency band f(n+1) in the following time slot.

[0043] A meeter investigates the frequency band similarly used for transmitting in the following time interval between time slots R. Transmission will not be performed if the time slot is occupied.

[0044] Next, the schematic diagram of <u>drawing 8</u> is referred to in relation to the concrete layout shown in <u>drawing 1</u>. Here, another technique of transmitting edictment is shown. The 802.11 bescen time interval T800 is divided into 802.11 communication links with three time intervals, i.e., the power reduction (PSP) mode of t802.11PSP310, a Bibetooth communication link called VIAV320, and 802.11 communication links with activity mode CAM called t802.11CAM300, it depends for the persistence time of a time interval T, t802.11PSP, VIAV, and t802.11CAM on a traffic property and the need for equipment (for example, time amount marginal service), in inhibition of each beacon time amount 300, AP20 transmits the beacon signal 350 to

802.11PSPMU(s) 120 and 140 which sewto in this period (some PSPMU(s) arrake with a different bescon). PSPMU 120 and 140 performs reception of a packet, and transmission at this period according to 802.11 protocol. Once all PSPMU(s) 120 and 140 receive a packet, AP20 is comprehensive ready-for-sending shifty, in order to intercept all 802.11 communication links at a NAV fortwork allocation vector) period. (GTS) A signal is transmitted. The pice networks 280 and 290 combined with these BTM(s) 130 and 150 enable it to start the BT communication finks 360 and 370 by BTM 130 and 150 (for it to hold in the same dual mode equipments 100 and 110) by which 802.11MU 120 and 140 is combined with them at this time. After termination of the NAV period 320, BTM130 and 150 weblic-tablies become incompetent, and size and all BT communication finks. The remaining time sensurit (up to the following beacan 380) becomes only for 802.11 continuation recognition mode (CAM) MU (not shown) which operates with 802.11 protocols.

[0045] In the gestalt of another operation, when MJI does not operate in PSP mode, 1902.1 (PSP310 time interval may be omitted. Here, the CTS signal 340 carries out the trigger city of a time interval thAV320 and t802.1 (CAM330 in the 802.11 bascon each period T300. [0045] In the gestalt of another operation, when NRI does not operate in CAM mode, 1902.11 (CAM330 time interval may be omitted. Here, the CTS signal 340 carries out the trigger only of the tHAV320 and 1802.1 (PSP310 time interval in the 802.1 beacon each period T300. [0047] the gestalt of another operation — setting — the Blustooth system — instead of [ from AP20] — global/central signal from the dual mode equipments 100 and 110 — possible-living — or its made impossible.

BTS 160, 170, 190, and 200. Then, MU120 sets communication link 460 to AP20 in the new period #802 11490. example, about 4 microseconds is needed by this warning before access. By this warning, BTM and 150. Before MU120 needs exclusive use of a medium, it warms BTM 130 and 150 of it, for the stop signal 420 which notifies that MU120 has taken over access to a medium to BTM 130 or 440 communication links to each BTS 160, 170, 180, and 200. When "it enakes" in order for 130 and 150 completes come pecket transmission, and suspends each communication link with 1802.11470, and resuming power saving mode, MU120 will communicate a start signal 410 to BTN 802.11 protocols. If reedy for whose MUs120 ending the communication fink of a paried signal 400 is transmitted to BTM 130 and 150. And MU120 communicates 450 with AP20 using [0049] When MU120 desires 802.11 communication fink initiation as shown in <u>drawing 4</u> , a stop In case an asynchronous uncombined (ACS) packet is used, the Bluetooth master adjusts 120802MU11 terminal to transmit data or to hear 802.11 beacon from AP20, MU120 transmits 130 and 150, And STM 130 and 150 oves ST protocol between periods tST450, and storts 430 802.11MU is in PSP mode. It is because these equipments are in halt mode in almost all cases. the communication link with the Blueboth abve. This technique is useful especially when all transmission. Once 602.1 IAU completes a communication link, the Bluetooth master can resum access about the pico network. Therefore, a slave is also stopped when a master suspends suppends transmission of a message to the Bluetooth slave to one or all the Bluetooth masters. Bluetooth meteoric operates through the course of normal until it directs it that 802.11MU 802 11AP does not need to adjust transmission between Bluetooth and 802 11. To instead of, the disgram of denting 4 in relation to the concrete layout shown in drawing 1. In this approach [0048] The gestalt of another operation of this invention is explained about said schematic

[0050] In the gestalt of another operation, periods t802.11490 and tBT490 are prodetermined spacing fixed through the communication link process. In the gestalt of another operation, periods t802.11450 and t87490 are the die length of the same time amount.
[0051] In the gestalt of another operation, it is the voice sending set designed in order that 817S 190, 170, 180, 190, 200, and 210 might transmit a head set or voice data to 877M 110 and 130, and voice data is transmitted via 802.11 network next. Speech information is usually transmitted on the Sluctooth network using a periodic generator lock orientation (SCO) protocol. This protocol does not flow to transmission interruption required to adjust with actuation of 802.11. In case Baletooth and 802.11 are used, it is more efficient to transmit voice in the Bluetooth network using the ACL protocol usually saved for data transmission. In order to use the ACL

ragulation technique currently indicated here, it is necessary to compress apeach information transmission in order to use the voice transmission on Bluebooth, when used with the frequency and to elongate. protocol with which the Bluetooth pico networks 280 and 290 are usually saved for data

reception of a signal. The RF module 530 communicates with MU110 in ACL mode using BT transmitted using the RF medule 530 and an antenna 532. A reverse process is used for unit 110 can be erranged so that it may be used equipping a user's balt. BTS210 is equipped with surphone in the same housing as the wireless unit 210 and a microphone 522. The portable type carphone 524, and the sound signal to the digital signal again as shown in drawing 8 . The D-A and A-D converter 528 for [ the ] champing conversely for the microphone 522, the with a dust made perturble type unit using BT protocol. The head set 521 is equipped with the containing the head set 521 equipped with the BTS radio equipment 210 which communicates digitized sound signal is compressed, is erranged by the packet by the processor 528, and is (0052) Reference of <u>drawing 2</u> and <u>drawing 8</u> shows the voice communication system 520

out and modification of all them and correction belong within the limits of the truth of this network 290 can evoid the interference from 802.11 equipment, and can establish actuation. Once it is established, the pico network 290 will start a light 540, in order to guarantee to a user recognize that other anodification and correction are made, which will oxist, and which it carries timeout period uses other approaches for the frequency regulation explained here. that the Bluetooth pice network 290 was established as a matter of fact. Tornination of a time-out continues for (0 seconds. By this time-out, during a timeout period, the Bluetooth pico beforehand to the portable type unit 140 — it needs (time-out) — it directs. For example, this the connection parties button 500 will stop the night message of the time amount defined light 540 which were prepared on MU140 of 802.11 natworks are added, Dual mode equipment substantially the same as that of a part of graving 1, and the connection carbon button 500 and enother operation of this invention is explained with reference to staving 2. Drawing 2 is attempt which adjusts 802.11 and Bluetooth equipment has it. In this point, the gestalt of power being interbothed with and actually operating, and another problem produced by the overtion, without separating from the preume of this invention. zeen explained, this contractor is an intention which comes out and charges the thing which can (0054) although what is considered to be the gestalt of suitable operation of this invention has 110 is appoilically equipped with the connection carbon button 500. If it operates by the user, [DOSS] I hear that the Skustooth equipment of low power ensures 802.11 equipments of high

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2.\*\*\*\* shows the word which can not be transisted.

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# DESCRIPTION OF DRAWINGS

Brief Description of the Drawings)

Bluetooth equipment Proving II it is the block diagram of the radio communications system which uses 802.11 and

Stretooth equipment for coincidence. the display mechine connected with the connection button switch, and uses 802.11 and <u>Drawing 2</u>] R is the block diagram of the redic communications system which is equipped with

time-sals to which 802.11 and Bluetooth equipment were edjusted Direction 3) It is the achemetic drawing of the gestalt of operation of this invention showing the

another time-exis to which 802.11 and Bluetooth equipment were adjusted. n

for evoiding interference. <u>Drewing 5]</u> It is the diagram showing the Bluetooth actuation approach of having been corrected

Drawing II it is drawing of the wireless head set fixed for voice communication. Descript 6] it is drawing showing an example of a rectangular polarization entenna.

[Description of Notations]

Drawing 8] It is the block diagram of the head set of drawing 2.

10 Cable Network

20 Access Point

30 Access Point

60 70 RF signal transmission and receiving set

100 110 Dual mode equipment

120 140 Portable type unit

130 150 Bluetooth master equipment

190, 200, 210 Bibetooth stave unit 160, 170, 180 Bluetooth stave unit

220, 230, 240 RF signal

250, 280, 270 RF signal

280 280 Pico nebeork

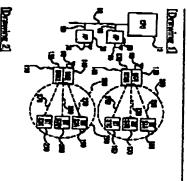
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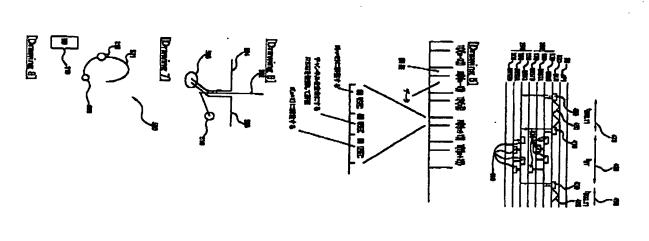
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